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A SURVEY OF IRISH FORMICIDAE.

By C. A. COLLINGWOOD.

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A TOUR of Ireland was made during the period 6-26 June, 1957, stations in 26 vice-county divisions were visited and the distributions of the various species noted. Stelfox (1927) gave the first authoritative list of Irish ants and was himself responsible for the initial discovery of some of the more interesting species. O'Rourke (1950) brought the known distribution up to date with the addition of many new vice-county records. The present paper takes note of recent revisions in taxonomy and nomenclature and includes all available information that has accumulated since O'Rourke's paper.

O'Rourke (1950) listed 16 indigenous Irish species. These included *Formica rufa* L., *F. fusca* L., *Lasius umbratus* Nyl. and *L. mixtus* Nyl. Yarrow (1955) has shown that *F. rufa* itself is absent from Ireland but that this group is represented there by *F. lugubris* Zett. in S. Ireland and *F. aquilonia* Yarrow in Armagh. Yarrow (1954) determined examples of "*F. fusca*" from Ireland as the similar species *F. lemani* Bond, which had not been recognised as a separate species in Britain until then. The true *F. fusca* L. has now been found in S. Ireland by the present writer. Wilson (1955) has shown that on present evidence *L. mixtus* must fall as a synonym of *L. umbratus* Nyl. These changes in species identity and nomenclature bring the present total of Irish species to 17. This compares with 38 for the British Isles as a whole.

As with other groups of insects there is an interesting juxtaposition between northern and southern species in Ireland. Two species, *Stenamma westwoodii* West. and *Myrmica schencki* Em., have a mainly central distribution in Europe and range only as far north as S. Scandinavia, where they are scarce. *Formica lugubris*, *F. aquilonia* and *F. lemani* on the other hand are northern or mountain species. The remainder have a very wide distribution throughout Europe.

The Irish species are listed in the following table which also gives the number of vice-county records and their distribution in the four provinces:—

	Leinster	Munster	Connaught	Ulster	Total
Total vice-counties...	14	10	10	6	40
Species	16	16	14	9	17
<i>Tetramorium caespitum</i> L.	2	1	0	0	3
<i>Stenamma westwoodii</i> West	4	3	0	0	7
<i>Leptothorax acervorum</i> Fab.	5	6	6	5	22
<i>Myrmica rubra</i> L.					
(<i>laevinodis</i> Nyl.) ...	13	9	10	5	37
<i>Myrmica ruginodis</i> Nyl. ...	14	10	10	5	39
<i>Myrmica scabrinodis</i> Nyl.	14	10	10	5	39
<i>Myrmica sabuleti</i> Mein. ...	9	7	6	3	25
<i>Myrmica schencki</i> Em. ...	3	3	1	0	7
<i>Formica lugubris</i> Zett. ...	2	5	1	0	8
<i>Formica aquilonia</i> Yarrow	0	0	0	1	1
<i>Formica lemni</i> Bond. ...	12	10	10	6	38
<i>Formica fusca</i> L. ...	1	2	1	0	4
<i>Lasius fuliginosus</i> Latr. ...	3	3	2	0	8
<i>Lasius niger</i> L. ...	8	10	5	1	24
<i>Lasius alienus</i> Först ...	2	2	2	0	6
<i>Lasius flavus</i> Fab. ...	8	10	7	1	26
<i>Lasius umbratus</i> Nyl. ...	5	2	1	0	8

NOTES ON THE SPECIES.

Ponera punctatissima Rog. was not included in the list of indigenous species given above since it is almost certainly an importation. This ant has however been found nesting outdoors in Ireland and Stelfox (pers. commun.) took alate females as recently as 1948 from a colony at the base of a wall in Dublin docks.

Tetramorium caespitum L. is not uncommon in parts of the coast in **WC**. The only fresh locality not recorded by O'Rourke (1950) is Castle Haven, where R. B. Freeman took this species in 1946. It is still abundant at the site of its original discovery in Ireland (Stelfox, 1933) at Ballyteige Burrows **WX**.

Stenamma westwoodii West. was taken by Stelfox (pers. commun.) near Blessington **WI** in 1953. There have been no other locality records since O'Rourke (1950). It is a pleasure to record its rediscovery not far from a site where R. A. Phillips took it in 1921 near New Ross **WX**. The only colony found was under a large stone against a beech tree and consisted of a queen, brood and about 150 workers.

Leptothorax acervorum Fab. is common in the west and north, but was not found in **WX**, **WA** nor **KK** from which counties it is still not recorded. New vice-county records were obtained from **NG**, **SL**, **ST**, **TY** and **LD**. Males and queens were flying in the Mourne mountains on June 24, an exceptionally early date for Ireland. Stelfox (in leg.) swept alatae in the same area over a month later on July 31.

Myrmica rubra L. is abundant throughout Ireland. This contrasts with Scotland, where the species is more local. New vice-county records include **WA**, **EC**, **NG** and **EM**. Alatae were found in a nest at Kilmore **WX** at the exceptionally early date of June 7. This species has been generally known as *laevinodis* Nyl. but this name, according to Yarrow (1955), who has examined the original type specimen of Linnaeus, is a synonym of *rubra* L.

Myrmica ruginodis Nyl. is undoubtedly the most widely distributed ant in Ireland as it is in Britain and was frequently the only species to be found on some areas of high moorland. Brian and Brian (1949) showed that this ant occurred in Britain in two forms, the one polygynous with many small queens and the other monogynous with one queen of normal size. Both forms were found together in most localities visited except in the south-eastern counties of **WX**, **KK** and **CW**, where the monogynous race alone was seen.

O'Rourke (1950) refers to intermediates between *rubra* and *ruginodis* in Ireland. In their investigation of the taxonomy of these two species, Brian and Brian (1949) found that such supposed intermediates from examples named by Donisthorpe were apparently either large *rubra* or small *ruginodis* workers. In the writer's collection all examples of these two species are readily separable according to the shape of the petiole. In *rubra* it is rounded or peaked in profile whereas in *ruginodis* it is more massive, truncate and angled behind.

New vice-county records for *M. ruginodis* were obtained from **MC**, **EC**, **NG**, and **EM**.

Myrmica scabrinodis Nyl. is very abundant throughout Ireland but was not found in such high or exposed places as *ruginodis*. New records included **MC**, **EC**, **NG**, **EM**, **LE** and **LD**.

Myrmica sabuleti Mein. has a more localised distribution than the species of this genus so far discussed. Its range however is similar to these. New records were obtained for **WC**, **MC**, **CL**, **NG**, **EM**, **ED**, **AR**, **AN** and **WA**. This was regarded as a variety of *scabrinodis* by Stelfox, who, no doubt, as a consequence overlooked many available records at the time of his 1927 list.

Myrmica schencki Em. is one of Ireland's most interesting species since it is by no means common even on the European mainland. It is sparsely distributed in Ireland, where it has been taken in a few localities in the south-east and south-west. A new record is that of Stelfox (pers. commun.), who swept a worker on 9 August, 1955, at Poulsellagh in the Burren region of county Clare.

In the present survey this species was found nesting in a rock wall near Snave bridge **WC**; an isolated, dealate queen was taken on a roadside bank near Parknasilla **SK**; a single worker was seen at Roundstone **WG**, and a nest was discovered near Ballyconeele in the same county. This nest was in turf over a boulder and the whole colony including the queen was disclosed by tearing away the turf.

Lasius fuliginosus Latr. was not found during the present survey. Some time was spent at Lough Hyne **WC**, where O'Rourke (pers. commun.) found it recently running over bare rock, and at Glengarriff, in the same county, where it has persisted over many years, but no examples were seen. This conspicuous and interesting species is scarce in Ireland and according to both Stelfox and O'Rourke (O'Rourke, 1950) is apparently diminishing. Stelfox (pers. commun.) states that, in addition to the vice-counties recorded by O'Rourke (1950), this ant has been taken in a few localities in **WX**.

Lasius niger L. is abundant in southern Ireland but was not found further north than **NG** in the present survey. New records were obtained for **MC**, **ST**, **SG** and **NG**.

Lasius alienus Först. appears to be very scarce in Ireland. The species was found nesting in a low ridge of rock at Snavel bridge but was not seen elsewhere. Many examples of *L. niger* in this area of **WC** were somewhat like *alienus* in appearance, being of exceptionally small size and somewhat reduced pilosity.

Lasius flavus F. is abundant but was not seen in Ulster. It is recorded for **DO** (Stelfox, 1927) and is not uncommon in both **ED** and **WD**. New records include **MC**, **EC**, **ST**, **SG**, **NG**, **SL** and **LE** (Dromahair). An unusual instance of primary pleometrose was seen at Lough Hyne, where six dealate queens were found together under a stone with a single egg cluster. Alatae were present in a few nests around the Upper Lake **SK** on June 12, which is very early for this species.

Lasius umbratus Nyl. was taken in four localities in **WC** where the species appears to be not uncommon and a new record was obtained from Blackwater bridge **SK**. All the examples seen lacked standing hairs on the scapes and tibiae and would in the past have been referred to *L. mixtus* Nyl. Wilson (1955) found that the characters used to distinguish the two forms intergraded so completely that a specific distinction was not possible. Examples seen in Stelfox's collection were mostly of the *mixtus* conformation, which appears to be the commonest form in Ireland as it is in N. Britain. In the present survey, groups of workers were found under large stones but no actual nests were traced.

Formica lugubris Zett. was seen in the Glen of Aherlow **ST** and at Lower Town near Woodford **SG**, both localities being at or near the sites of previous records. In both places the nests were single, small and only located after much search. This species was also sought for around the Upper Lake and Derrienuihy **SK** without success. It was last seen in that locality by E. F. Bullock in 1933. This ant is now almost certainly extinct in **WI** according to Stelfox (pers. commun.), who has not seen it there since 1926. At Woodford only two nests could be found and these were quite separate. A 70 year old cottager who lived not far from one of the nests informed the writer that the ants were at one time more plentiful and that this nest was the only one now known to him in the area and had been there since his earliest recollection.

This ant has been recorded from a total of 17 localities since Haliday's list of over a hundred years ago. It is now almost certainly extinct in six of these and in the last 15 years it has positively been confirmed from only five places. Some of this decline can be attributed to the felling of original woodland as at Killoughrim **WX**; but, in the main, the gradual extinction of this ant cannot be imputed to the interference of man since woodlands still exist at most of the recorded sites. In the Eastern Highlands and N. England *F. lugubris* is normally to be found in great abundance at most recorded sites and it is exceptional with this species to find only one or a very few nests at a site.

The climates of N. Britain and of S. Ireland differ markedly in the relative mildness of the Irish winter. It is possible that high winter temperatures may impair the efficiency of the species with respect to the production of sexuals. In support of this suggestion Stelfox (pers. commun.) never found alatae in colonies visited at fairly regular intervals in the Devil's Glen **WI** in the years 1921–1926. These are normally abundant even in quite small nests of this species in the early summer. Gösswald (1954) demonstrated that colony groups of the similar sp. *F. rufa* L. did not produce sexuals when kept under isothermal conditions, whereas *F. nigricans* Em., which extends right into the Mediterranean area, developed normally under the same conditions.

Formica aquilonia Yarrow is known from one locality only in Armagh where it was thought to be in danger of being extirpated on its then known site by the establishment of a pig farm in 1933. The writer found it in flourishing condition in a thin belt of woodland the other side of a peat working, away from the pig farm area. At least 20 nests were counted within and about the margins of the wood. There would seem no present danger of extinction in this locality so long as the remaining strip of woodland remains uncleared.

This species has a more west and north distribution in Scotland than *F. lugubris* and is particularly flourishing in many parts of Argyllshire in which county the latter has not yet been taken. The monthly mean temperatures of stations in Argyllshire closely resemble those of Armagh and although the climate is distinctly oceanic, the annual temperature range is greater than for representative stations in S. Ireland.

Formica lemani Bond. is the common black ant of Ireland and N. Britain. Specimens have now been verified by the writer from 30 vice-county divisions, including new records from **NK, MC, ST, LK, NG, and LE**. There are eight other divisions from which "*fusca*" has been recorded which probably refer to *lemanii*. This species was encountered in each of the 26 vice-counties visited with the exception of **WX** where *fusca* is at least as likely to occur. The habits and appearance of the two species are similar and single small workers are sometimes difficult to distinguish satisfactorily. Males, queens and series of workers are however easily distinguished.

Formica fusca L. has been verified from Ireland for the first time during the present survey. This species was taken at Graiguenamanagh **KK**.

Toormore, Snave bridge and Glengarriff WC, around the Upper Lake and Derriemhy SK and very locally near Roundstone WG. It is to be noted that *lemani* was also abundant in these counties and was present at all but three of the sites where *fusca* was taken. There is no doubt that *F. fusca* will also soon be recognised in several other counties especially in the south-east. The situation with these two species in S. Ireland appears to be comparable with many areas in the N. Midlands of England, where both species are found but *lemani* tends to predominate.

A pseudogyne of *F. fusca* was taken in a small colony by the Upper Lake SK. This is of some interest as this aberrant worker-queen intercaste is rare in this species and has not been recorded in Britain. The specimen is the size of a medium large worker with a considerably overdeveloped thorax but with the gaster of a normal worker as is usual with pseudogynes. This type of monstrosity is possibly due to some form of parasitism but further investigation is required.

SUMMARY.

Recent revisions in taxonomy and nomenclature as they affect the Irish fauna are noted.

General notes on the species together with 51 new vice-county records are given.

The occurrence of the two species of wood ant *Formica lugubris* Zett. and *F. aquilonia* Yarrov is discussed and the rediscovery of the latter in its only known Irish station described.

The presence of true *Formica fusca* L. in Ireland is verified for the first time. The first recorded discovery of a pseudogyne of this species in the British Isles is noted.

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